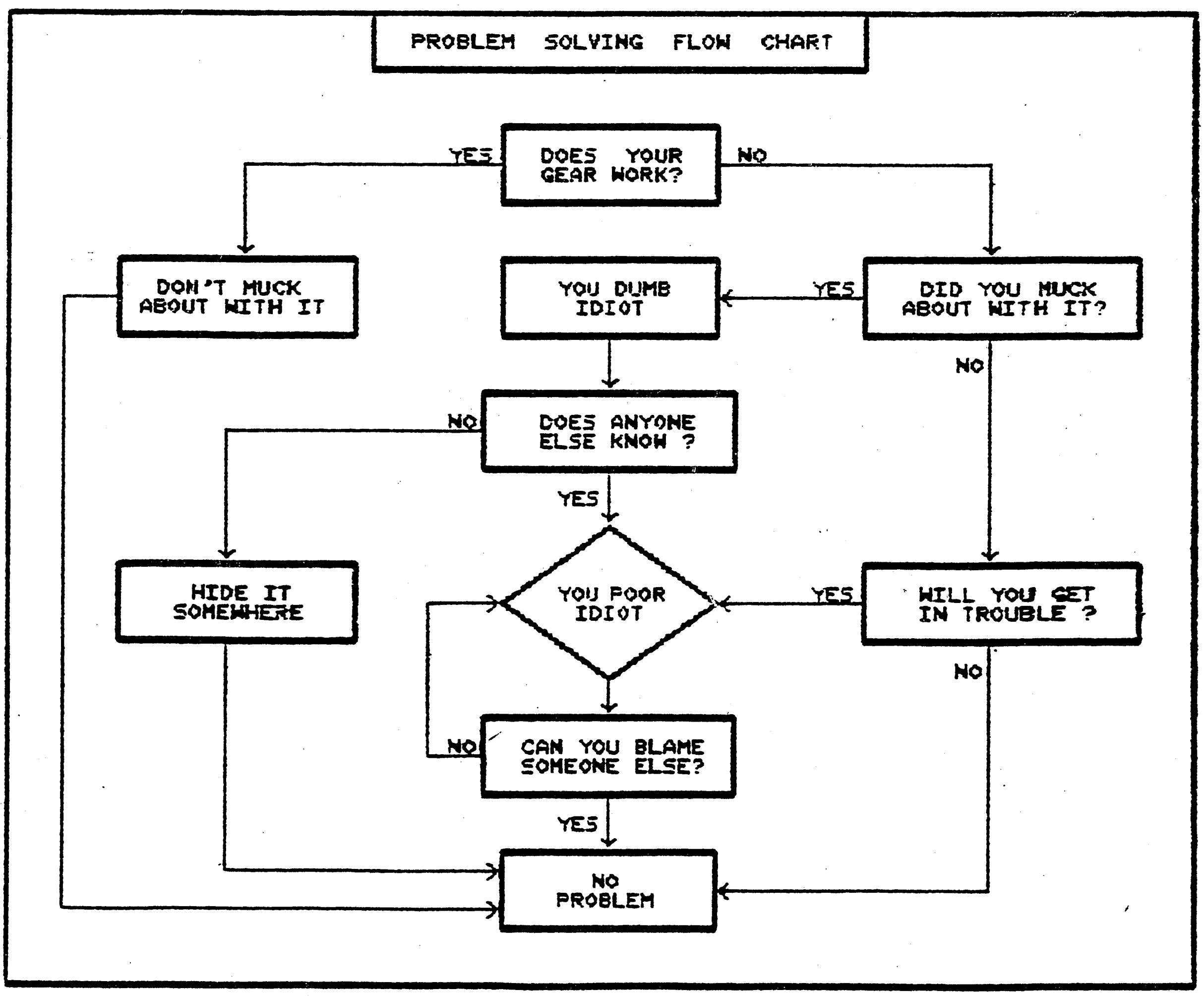
JAN/FEB 1990 ISSUE # 28

VZ 200/300

HUNTER VALLEY VZ JOURNAL



PRODUCED BI-MONTHLY BY H.V.VZ.U.G.

EDITOR'S COMMENTS . . .

STARTING WITH THIS ISSUE THE HARDWARE PROJECTS WILL BE DONE USING A CAD (COMPUTER AIDED DESIGN) PROGRAM ON MY IBM PC COMPATIBLE COMPUTER. IN DUE TIME I'LL BE ALSO ABLE TO PRODUCE PCB'S TO GO WITH MOST PROJECTS. SOMETIMES IT USED TO TAKE ME WEEKS TO DO IT MANUALLY USING PEN AND PAPER AND NOW IT'S SO EASY.

THANK YOU JOHN D'ALTON ---

AS MOST OF YOU MAY BE AWARE JOHN HAS JUST POSTED OUT HIS LAST ISSUE OF LE'VZ 200/300 OOP (VZ MAGAZINE) AFTER SIX YEARS OF OPERATION. ONLY ANOTHER EDITOR WOULD KNOW THE EFFORT, TIME AND DEDICATION IT TAKES TO PRODUCE ISSUE AFTER ISSUE. ON BEHALF OF MYSELF AND OTHER VZ USERS I SAY THANK YOU JOHN FOR A JOB WELL DONE AND WE WISH YOU ALL THE BEST IN YOUR FORTHCOMING OPERATION.

APOLOGIES ---

ONCE AGAIN MY APOLOGIES FOR THE LATENESS OF THIS ISSUE FOR WHICH I APOLOGISE MOST SINCERLY. THERE ARE MANY REASONS, CONTINUING PROBLEMS FROM CAR ACCIDENT AND LOSS OF JOB WHICH HAS EFFECTED ME AS WELL AS LOSS OF MOTIVATION.

I'VE BEEN EDITING THE JOURNAL SINCE DECEMBER 1986 AND IT HAS TAKEN A GREAT DEAL OF TIME AND EFFORT, ESPECIALLY LATELY TO KEEP GOING ON. BECAUSE I PRODUCE THE JOURNAL BY MYSELF, ANY PROBLEMS I HAVE ARE REFLECTED IN ITS PRODUCTION.

MY SINCERE THANKS GO TO ALL THE CONTRIBUTORS OF THE JOURNAL AND TO THEIR CONTINUING SUPPORT WITH CONSISTENT MATERIAL OF HIGH QUALITY AND THE JOURNAL OWES ITS SUCCESS TO THEM.

THANKS A MILLION ---

I AM VERY SORRY TO HEAR ABOUT YOUR PROBLEMS IN RECOVERING FROM THE CAR ACCIDENT, THE END OF YOUR JOB AND DAMAGE FROM THE EARTHQUAKE. IT OCCURS TO ME THAT THESE EVENTS, THE EARTHQUAKE IN PARTICULAR, COULD HAVE CAUSED ADDITIONAL EXPENDITURE IN RESPECT OF THE JOURNAL-OR WILL DO SO. I WOULD BE QUITE HAPPY TO PAY SOME ADDITIONAL SUBSCRIPTION IN THAT REGARD. ACCORDINGLY, I ENCLOSE $100.00 WHICH YOU CAN USE IN ANY WAY YOU CONSIDER APPROPPRIATE.

YOURS SINCERLY, JOHN A. CORLETT

I WAS VERY MOVED BY JOHN'S OFFER AND AFTER CONSULTATION WITH HIM DONATED FUNDS TO NEWCASTLE EARTHQUAKE APPEAL. I COULD NOT ACCEPT THE MONEY BECAUSE THE EARTHQUAKE HAD NO EFFECT AS FAR AS THE JOURNAL PRODUCTION GOES. ONCE AGAIN I THANK JOHN FOR HIS GENEROUS AND SELFLESS OFFER. YOU'RE ONE IN A MILLION JOHN.

NOTE TO THE EDITOR ---

FIRST A SUGGESTION, HOW ABOUT AN "ANSWER TO CORREPONDENTS" COLUMN OR PAGE IN THE MAG? HAVE YOU TRIED IT OR THINK IT WORTHWHILE FOR THOSE WHO HAVE A QUERY OF SOME KIND, AND WHO AREN'T IN A RUSH FOR AN ANSWER.

I LIKED YOUR ARTICLES IN THE LAST ISSUE, BOTH THE ONE ON SELECTING A COMPUTER, AND THE OTHER ON KEYBOARDING. NOW I KNOW A BIT MORE ABOUT PAPER SIZES. VERY INTERESTING, ESPECIALLY SINCE I CONVERTED METRICS TO INCHES. A10 IS A TRIFLE SMALL, ISN'T IT?

THANKS FOR YOUR KIND WORDS JOHN ABOUT THE ARTICLES AND YOUR SUGGESTION.

DO YOU KNOW IF ANYONE HAS ADAPTED THE "LISTENING POST" HARDWARE AND SOFTWARE FROM THE ARTICLE IN THE JULY, 1985 ISSUE AUST. ELEC. MONTHLY, FOR USE WITH THE VZ? I WROTE TO TOM MOFFAT, THE AUTHOR, BUT HE INDICATED THAT HE WAS A MICROBEE MAN, AND TOO BUSY TO WORRY ABOUT OTHER MAKES OF COMPUTER, BUT I DID NOTE LATER THAT A.E.M. WAS LATER OFFERING SOFTWARE FOR THE C64 AS WELL AS THE MICROBEE.

IF YOU CAN HELP CONTACT: JOHN LUXTON PO BOX 99 BIGGENDEN 4621 (071) 271 1515

DISCLAIMER ---

YOUR PAGE ---

STARTING WITH THIS ISSUE THE JOURNAL WILL HAVE A PAGE DEVOTED TO YOU. YOUR COMMENTS, SUGGESTIONS, REQUESTS FOR HELP, ADS, OR ANSWERS WILL GO IN THIS PAGE. AS YOU'LL NOTE I'VE STARTED THE BALL ROLLING WITH TWO HELP REQUESTS AND QUITE A FEW FOR SALE ADS. SO IF YOU'RE AFTER SOME VZ GEAR, JUST MAKE YOUR CHOICE AND PAY YOUR MONEY. DON'T BE SHY, SHARE YOUR VIEWS WITH OTHER VZ USERS.

HELP — I'M RUNNING A BIT SHORT ON ARTICLES AGAIN FOR THE JOURNAL AND YOUR HELP IN THIS REGARD WOULD BE APPRECIATED. ED.

HELP — THE NEWCASTLE MICROCOMPUTER EXHIBITION WILL BE HELD IN SEPTEMBER THIS YEAR AND AS USUAL WE'LL BE THERE. WE ARE LOOKING FOR YOUR SUPPORT SO WE CAN PRESENT A BETTER DEMONSTRATION AND NEED HELP IN THE FOLLOWING AREAS:-

SCREENS - HI-RES (2K) & SUPER HI-RES (6K) SCREENS - NEEDED ALSO SCREEN OF A PUB.
MUSIC - ANY TUNES IN DATA OR SOUND STATEMENTS OR MUSIC WRITER TUNES.
XB BASIC SOUND ROUTINES OR DEMOS
DEMOS - DEMONSTRATION PROGRAMS, ANY TYPE AND IDEAS GALORE.

IF YOU CAN HELP OUT PLEASE CONTACT:- JOE LEON 22 DRURY STREET WALLSEND 2287.
NOTE - ALL TAPES/DISKS AND MATERIAL WILL BE RETURNED. ED.

FOR SALE ---

- 1 OFF VZ300 WITH POWER PACK AND MANUAL - $60.00
- 1 OFF VZ300 16K MEMORY EXPANSION - $20.00 - 1 OFF DSE DATA RECORDER - $40.00
- 1 OFF D.S. 100 PRINTER - $120.00 - 1 OFF PRINTER INTERFACE - $30.00
- 1 OFF LASER DISK DRIVE, LASER DISK CONTROLLER & POWER SUPPLY - $200.00
- 1 OFF EXTENDED DOS EPROM WITH INSTRUCTIONS FOR INSTALLATION - $30.00
- 1 OFF AWA MONITOR & 1 OFF 14" B&W TV - N/C (NO CHARGE)

P R O G R A M S - $20.00
TAPE - DSE WORD PRO., AND OTHERS ON TAPE.
DISK - WORD PRO., GRAFSTAR, LASER CALC, DATA-BASE, MAIL-LIST, FAST DISK, DATA, 3D MAZE, FILE SEARCH, W.P. PATCH 3.1 AND DISK MENU.

TOTAL PRICE - $520.00 - CONTACT R.E. FEAR 82 ALLWOOD CRESCENT LUGARNO 2210

FOR SALE ---

- 1 OFF VZ200 & AQUARIUS DATASSETTE - $50.00 PLUS $5.00 POST AND PACKING.
- 1 OFF VZ200, VZ DATASSETTE, VZ200 16K MEMORY EXPANSION & PRINTER I/FACE - $100.00 PLUS $15.00 POST AND PACKING.

CONTACT ALEX TAYLOR ON - (049) 683 509 - ANY DAY AFTER 6.30PM.

FOR SALE ---

- 1 OFF VZ300 - SUPER GRAPHICS MODIFIED - 256 X 192 PIXEL RESOLUTION.
- 1 VZ300 DATASSETTE, 1 PRINTER I/FACE, 1 LIGHT PEN AND STACKS OF TAPES.

CONTACT:- MATTHEW TAYLOR - (049) 528 755 - 230/9 NEWCASTLE ROAD JESMOND 2299

FOR SALE ---

I HAVE SOME VZ BITS AND PIECES THAT ARE SURPLUS TO MY REQUIREMENTS AND OFFER THEM FOR SALE:-

- 1 OFF VZ WORDPRO CARTRIDGE WITH INSTRUCTION MANUAL - $38.00
- 1 OFF VZ DATASSETTE (DR20) -$40.00
- 1 OFF VZ JOYSTICKS - $28.00 - 1 OFF VZ PRINTER INTERFACE - $18.00

PRICES INCLUDE POSTAGE TO EASTERN STATES, OTHER PTATES ADD $2.00. FOR FURTHER INFORMATION CONTACT - JOHN LUXTON P.O. BOX 99 BIGGENDEN 4621 (071) 271 515.

TANDY PRINTER PATCH BY BRIAN GREEVE

I MUST STATE THAT I DID NOT CREATE THIS PROGRAM. I AM ADVISED THAT IT WAS ORIGINALLY WRITTEN BY JAMIE PERRY AND WAS KNOWN AS THE "EPSON PRINTER PATCH", ALL CREDIT IN THAT REGARD GOES TO HIM.

I MERELY ALTERED IT TO ALLOW ME TO USE MY PRINTER'S GRAPHIC CAPACITY TO PRINT OUT GRAPHIC SYMBOLS AND INVERSE TEXT.

THIS UTILITY IS OFFERED IN SIMILAR FORM TO THE ORIGINAL, IT OCCUPIES THE SAME MEMORY AREA, IT WILL OPERATE THE TANDY DMP 105 AND PROBABLY VERY FEW OTHERS.

PROGAMMERS WHO AVAIL THEMSELVES OF THE SOURCE CODE LISTING MAY LOCATE THE PROGRAM IN AN AREA OF MEMORY MORE APPROPRIATE TO THEIR REQUIREMENTS.

BASIC LISTING FOR TANDY PRINTER PATCH

```
00010 FOR I = -21937 TO -21713
00020 READA:POKE I,A
00025 CHECKSUM = CHK+A:NEXT
00030 DATA62,195,50,193,121,53,102,170.34,194.121,205,201,1,33
00032 DATA17,171,205,167,40,195,25,26,58,154,120,51,51,183,121
00034 DATA193,250,84,59,202,58.3,229,245,33,155,120.52,126,254
00036 DATA79,32,7,54,0,62,13,205,186,58,241,225,254,13,32,7,62
00038 DATA0,50,155,120,62,13,183,250,154,170,195,186,58,203,119
00040 DATA40,58,230,63,245,197,213,229,111,38,0,62,18,205,186,58
00042 DATA6,4,229,209,183,237,90,16,252.229,193,33,148,59.9,62
00044 DATA255,205,186,58,6,5,126,35,205.186,58,16,249,62,255,205
00046 DATA186,58,62,30,205,186,58,225.209,193.241,201.197,71,62
00048 DATA18,205,186,58,120,230,15,229,203,39,79,62,30,145,79,175
00050 DATA71,33,175,2,9,126,71.35,126,79.120,205.186,58,205,186
00052 DATA58,205,186,58,121,205,186,58,205,186,58,205,186,58.62
00054 DATA30,205,186,58,225.193,201,13,84,65,78,68,89,32.80,82
00056 DATA73,78,84,69,82,32,80,65,84,67,72,32,76,79,65,68,69,68
00058 DATA13,0,0,0
00075 IF CHECKSUM <> 25562 THEN PRINT"DATA ERROR":END
00080 CLS:PRINT"SAVE TO DISK OR TAPE   (D/T)"
00090 A1$=INKEY$:A$=INKEY$:IFA$<>"D"ANDA$<>"T"THEN90
00100 SOUND30,1:IFA$="T"THEN180
00110 IF PEEK( 16384 ) = 170,140
00120 PRINT"NO DISK DRIVE TO USE"
00130 GOTO 180
00140 PRINT"INSERT DISK,CLOSE DOOR & PRESS  RETURN"
00150 IFINKEY$<>CHR$(13),150
00155 SOUND30,1
00160 BSAVE"TANDY",AA4F,AB2F
00170 END
00180 FOR I = 29440 TO 29484
00190 READ A: POKEI,A: NEXT
00200 PRINT"INSERT CASSETTE.PRESS PLAY &    RECORD THEN RETURN"
00210 IF INKEY$ <> CHR$(13),210
00220 SOUND30,1
00230 POKE30862,0:POKE30863,115:X=USR(0)
00240 END
00250 DATA33,79,170,34,164,120,33,47,171,34,249.120
00260 DATA33,38,115,14,241,243,205,172,52,251.33,233,122
00270 DATA34,164,120,205,248,26,35,34.249.120
00280 DATA195,25,26,34,84,65,78,68,89,34
```

```
                         ;
                         ;   *** TANDY ***
                         ;
                         ;VERSION OF THE EPSON PATCH
                         ;FOR THE TANDY PRINTER
                         ;JULY 13 1989
                         ;
A92D 3E C3                      LD    A,0C3H
A92F 32 C1 79                   LD    (79C1H),A
A932 21 44 A9                   LD    HL,STRT
A935 22 C2 79                   LD    (79C2H),HL
A938 CD C9 01                   CALL  01C9H
A93B 21 EF A9                   LD    HL,MES
A93E CD A7 28                   CALL  28A7H
A941 C3 19 1A                   JP    1A19H
A944 3A 9C 78            STRT   LD    ,,(789CH)
A947 33                         INC   SP
A948 33                         INC   SP
A949 B7                         OR    A
A94A 79                         LD    A,C
A94B C1                         POP   BC
A94C FA 54 3B                   JP    M,3B54H
A94F CA 3A 03                   JP    Z,033AH
A952 E5                         PUSH  HL
A953 F5                         PUSH  AF
A954 21 9B 78                   LD    HL,789BH
A957 34                         INC   (HL)
A958 7E                         LD    A,(HL)
A959 FE 4F                      CP    4FH
A95B 20 07                      JR    NZ,POP
A95D 36 00                      LD    (HL),0
A95F 3E 0D                      LD    A.0DH
A961 CD BA 3A                   CALL  3ABAH
A964 F1                  POP    POP   AF
A965 E1                         POP   HL
A966 FE 0D                      CP    0DH
A968 20 07                      JR    NZ,FORD
A96A 3E 00                      LD    A,0
A96C 32 9B 78                   LD    (789BH),A
A96F 3E 0D                      LD    A,0DH
A971 B7                  FORD   OR    A
A972 FA 78 A9                   JP    M,TWOD
A975 C3 BA 3A                   JP    3ABAH
A978 CB 77               TWOD   BIT   6,A
A97A 28 3A                      JR    Z,GRPH
A97C E6 3F                      AND   3FH
A97E F5                        PPUSH  AF
A97F C5                         PUSH  BC
A980 D5                         PUSH  DE
A981 E5                         PUSH  HL
A982 6F                         LD    L,A
A983 26 00                      LD    H,0
A985 3E 12                      LD    A,12H
A987 CD BA 3A                   CALL  3ABAH
A98A 06 04                      LD    B,4
A98C E5                         PUSH  HL
A98D D1                         POP   DE
A98E B7                         OR    A
A98F ED 5A               LP     ADC   HL.DE
A991 10 FC                      DJNZ  LP
A993 E5                         PUSH  HL
```

```
A994 C1          062      POP  BC
A995 21 94 3B    063      LD   HL,3B94H
A998 09          064      ADD  HL,BC
A999 3E FF       065      LD   A,0FFH
A99B CD BA 3A    066      CALL 3ABAH
A99E 06 05       067      LD   B,5
A9A0 7E          068 LP1  LD   A,(HL)
A9A1 23          069      INC  HL
A9A2 CD BA 3A    070      CALL 3ABAH
A9A5 10 F9       071      DJNZ LP1
A9A7 3E FF       072      LD   A,0FFH
A9A9 CD BA 3A    073      CALL 3ABAH
A9AC 3E 1E       074      LD   A,1EH
A9AE CD BA 3A    075      CALL 3ABAH
A9B1 E1          07       POP  HL
A9B2 D1          077      POP  DE
A9B3 C1          078      POP  BC
A9B4 F1          079      POP  AF
A9B5 C9          080      RET
A9B6 C5          081 GRPH PUSH BC
A9B7 47          082      LD   B,A
A9B8 3E 12       083      LD   A,12H
A9BA CD BA 3A    084      CALL 3ABAH
A9BD 78          085      LD   A,B
A9BE E6 0F       086      AND  0FH
A9C0 E5          087      PUSH HL
A9C1 CB 27       088      SLA  A
A9C3 4F          089      LD   C,A
A9C4 3E 1E       090      LD   A,1EH
A9C6 91          091      SUB  C
A9C7 4F          092      LD   C,A
A9C8 AF          093      XOR  A
A9C9 47          094      LD   B,A
A9CA 21 AF 02    095      LD   HL,02AFH
A9CD 09          096      ADD  HL,BC
A9CE 7E          097      LD   A,(HL)
A9CF 47          098      LD   B,A
A9D0 23          099      INC  HL
A9D1 7E          100      LD   A,(HL)
A9D2 4F          101      LD   C,A
A9D3 78          102      LD   A,B
A9D4 CD BA 3A    103      CALL 3ABAH
A9D7 CD BA 3A    104      CALL 3ABAH
A9DA CD BA 3A    105      CALL 3ABAH
A9DD 79          106      LD   A,C
A9DE CD BA 3A    107      CALL 3ABAH
A9E1 CD BA 3A    108      CALL 3ABAH
A9E4 CD BA 3A    109      CALL 3ABAH
A9E7 3E 1E       110      LD   A,1EH
A9E9 CD BA 3A    111      CALL 3ABAH
A9EC E1          112      POP  HL
A9ED C1          113      POP  BC
A9EE C9          114      RET
A9EF 0D          115 MES  DEFB 0DH
                 116      EQU  $
A9F0 - TEXT -    117 *TANDY PRINTER PATCH LOADED*
AA0A 0D          118      DEFB 0DH
AA0B 00          119      NOP
AA0C 00          120      NOP
AA0D 00          121      NOP
BYTES FREE :- 21359 ERRORS : 00000
```

ONE POWER SUPPLY/TWO DRIVES BY NEVILLE HUGHES

(TEXT AND CIRCUITS BY JOE LEON)

SOME ISSUES BACK I STATED THAT ONE POWER SUPPLY COULD POWER TWO DRIVES. SINCE THEN NEVILLE HAS INFORMED ME THAT:-

"YER WRONG MATE", IN SOME CASES. WHEN I BOUGHT SECOND DRIVE COUPLE YEARS BACK, THE RED LIGHT CAME ON AT POWER UP BUT "NO GO", SO MADE SECOND LEAD FROM SUPPLY ('Y' ADAPTOR) AND ALL OK. BOUGHT THIRD UNIT (2ND HAND), FORGOT TO PLUG IN POWER LEAD AND IT WORKED, SO PULLED DRIVES APART AND FOUND THE P.C. BOARDS WERE DIFFERENT.

IN HIS LETTER NEVILLE WENT ON TO DESCRIBE THE DIFFERENCES AND HOW TO RECTIFY THEM. RECENTLY I BOUGHT ANOTHER DISK DRIVE AND CONTROLLER MYSELF AND DISCOVERED THAT THE DISK CONTROLLER PCB'S CAN BE DIFFERENT AS WELL AND THIS ARTICLE IS INTENDED TO PROVIDE INFORMATION ON HOW TO RECTIFY THE PROBLEM/S AND FOR PERSONS WHO HAVE TWO POWER SUPPLIES FREE UP SECOND UNIT FOR OTHER PURPOSES.

BEFORE PROCEEDING ANY FURTHER I WOULD LIKE TO MAKE IT QUITE CLEAR THAT ONE POWER SUPPLY WILL SUPPLY ENOUGH POWER FOR TWO DRIVES. THE ELECTRONICS OF BOTH DRIVES ARE ON AT THE SAME TIME, BUT ONLY ONE DRIVE AND ITS STEPPER MOTOR IS ACCESSED AT ANY ONE TIME.

FOR TWO DRIVES TO WORK WITH ONE POWER SUPPLY, BOTH DRIVES MUST BE PROVIDED WITH GND, +5V AND +12V AND DRIVE WITHOUT POWER SUPPLY GETS ITS SUPPLY VIA THE RIBBON CABLE. WHEN EITHER +5V OR +12V OR BOTH DON'T REACH SECOND DRIVE THEN OBVIOUSLY IT CAN'T FUNCTION PROPERLY.

WE'LL START BY LOOKING AT J1, 20 PIN IDC PLUG/SOCKET AT THE TOP REAR OF THE DISK DRIVE 1 PCB FIRST. PINS 1, 3, 5 & 7 ARE ALL CONNECTED TO GROUND. PINS 11 & 12 GO TO +5V. PINS 13, 15, 17 & 19 ACCORDING TO TECNICAL REFERENCE ARE NOT CONNECTED TO ANYTHING, BUT ARE JOINED TO EACH OTHER UNDER THE PCB.

IN BOTH MY DRIVES THE ABOVE PINS ARE CONNECTED TO +12V VIA A LINK WIRE AND IN SOME DRIVES THIS LINK WIRE IS MISSING. IT MAY BE EASIER TO UNDERSTAND IF WE FOLLOW PATH THE POWER TAKES WHEN IT ENTERS THE DRIVE POWER SOCKET. WE'LL PRESUME POWER IS CONNECTED TO DRIVE ONE.

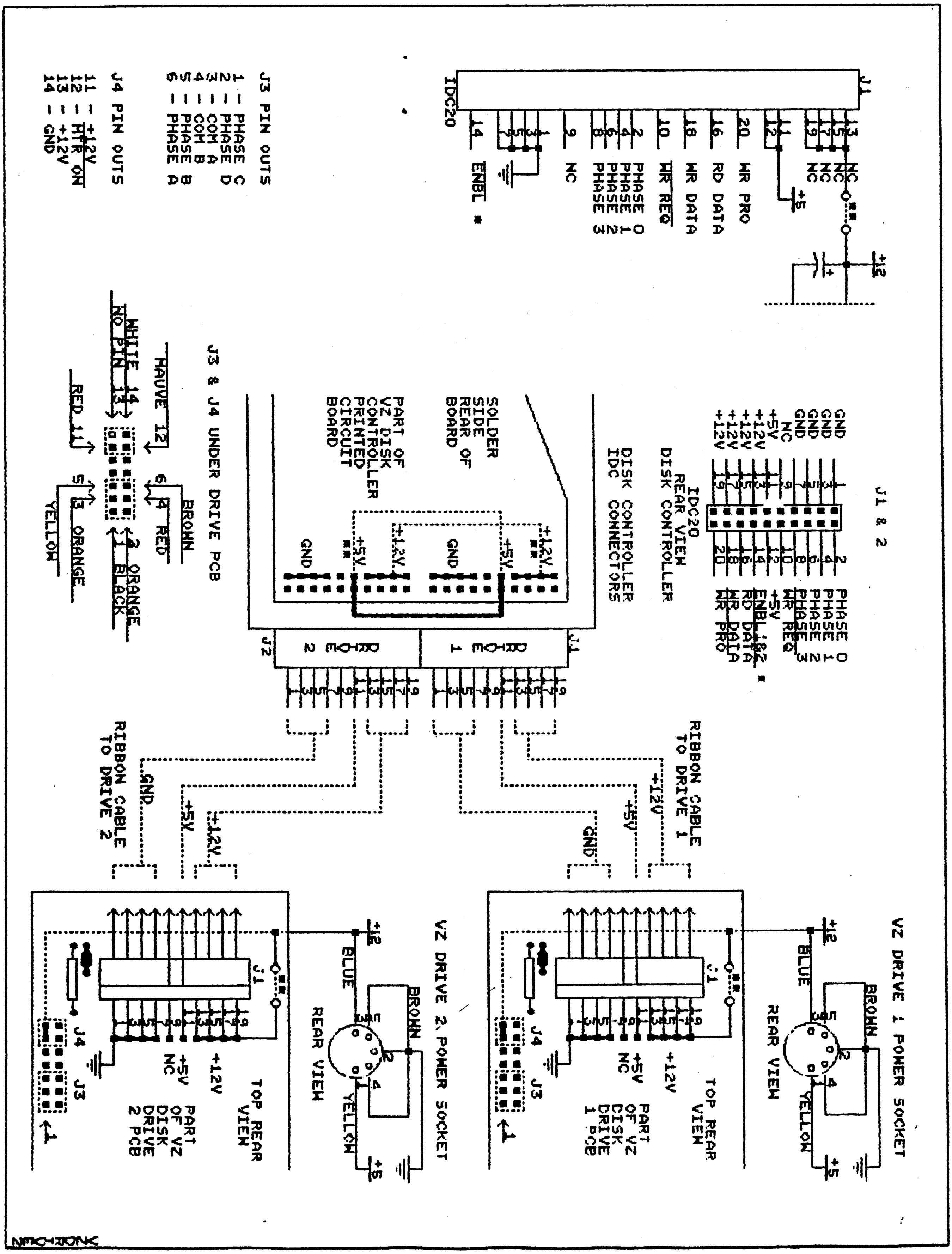
THE GND (PINS 5, 2 & 4), +5V (PIN 1) & +12V (PIN 3) APPEAR AT THE 5 PIN DIN SOCKET AT REAR RIGHT OF THE DRIVE AND GO UNDER THE REAR OF THE MAIN PCB WHERE THEY ARE SOLDERED TO THEIR RESPECTIVE TRACKS. THE +12V TRACK CONTINUES UNDER THE BOARD AND IS ALSO CONNECTED TO J4, PINS 11 & 13. NOTE: J4, PIN 13 IS CUT AWAY UNDER PCB.

THE LINK MARKED WITH TWO ASTERICKS GOES FROM THE +12V TRACK UNDER THE PCB TO J1 PINS 13, 15, 17 & 19 ALSO UNDER THE PCB. THIS IS THE LINK THAT IS MISSING ON DRIVES THAT WON'T WORK WITH ONE POWER SUPPLY.

IF WE FOLLOW THE THREE SUPPLY RAILS TO THE DISK CONTROLLER WE'LL NOTE THAT FOR SECOND DRIVE TO GET POWER THE +5V MUST GO FROM J1, PINS 11 & 12 TO J2, PINS 11 & 12. THE +12V MUST ALSO GO FROM J1, PINS 13, 15, 17 & 19 TO J2, PINS 13, 15, 17 & 19. IN SOME DISK CONTROLLERS THERE MAY BE NO CONNECTION/S BETWEEN J1 & J2 +5V AND OR +12V SUPPLY RAILS. THE DASHED LINE/S INDICATE WHERE YOU WOULD SOLDER LINK WIRE/S.

GOING FROM DISK CONTROLLER J2 IDC SOCKET TO DRIVE 2, J1 SOCKET WE FIND THE SAME APPLIES AS IN DRIVE 1, J1. THAT MEANS WE MUST HAVE +5V & +12V APPEARING AT J1 FOR DRIVE 2 TO OPERATE PROPERLY.

ONE POWER SUPPLY/TWO DRIVES CONTINUED



AND NOW TO THE DETAILS ON HOW TO FIX THE PROBLEM IF ONE POWER SUPPLY DOES'NT WORK WITH TWO DRIVES. FIRST YOU'LL HAVE TO REMOVE THE TOP COVERS OF BOTH DRIVES AND DISK CONTROLLER BUT LEAVE UNITS IN BOTTOM HALF OF CASES AND THEN PLUG BOTH DRIVES INTO THE DISK CONTROLLER SO CHECKS CAN BE MADE.

USING A MULTIMETER OR CONTINUITY TESTER START AT DRIVE 1. CONNECT ONE TESTER PROBE TO PIN 3 (+12V) ON 5 PIN POWER SOCKET AND OTHER TESTER PROBE TO TOP 4 PINS ON J1, PIN 13, 15, 17 & 19. IF YOU DON'T HAVE CONTINUITY THEN IT MEANS THE +12V LINK WIRE IS MISSING AND HAS TO BE PUT IN PLACE.

NEXT MAKE THE SAME CHECKS ON DRIVE 2 AS WELL AND THEN PROCEED TO DISK CONTROLLER NEXT. CHECK FOR +5V CONTINUITY BETWEEN J1 AND J2 AND THEN CHECK FOR +12V CONTINUITY BETWEEN J1 AND J2 WHICH FINISHES THE CHECKING AND ONLY LEAVES PUTTING THE MISSING LINK WIRES IN PLACE.

REPLACING MISSING DISK DRIVE LINK:-

SOLDER ONE END OF A LENGHT OF COVERED WIRE TO PIN 3 OF 5 PIN DIN SOCKET AND THE OTHER END TO J1, PIN 13 AND PINS 15, 17 & 19 AS WELL. DO THIS TO BOTH DRIVES IF NECCESSARY.

REPLACING MISSING DISK CONTROLLER LINK/S:-

IF THERE'S NO CONTINUITY OF +5V BETWEEN J1 & J2 THEN SOLDER A COVERED LINK WIRE BETWEEN POINTS INDICATED BY DASHED LINE. DO THE SAME FOR J1 & J2 IF THERE'S NO CONTINUITY OF +12V BETWEEN POINTS INDICATED BY DASHED LINE. THAT COMPLETES THE FIXUP WHICH YOU MUST AGREE WASN'T DIFFICULT AT ALL, ONLY 4 LINK WIRES AT MOST.

ALL THAT REMAINS NOW IS TO TEST OUT AND YOU SHOULD FIND THAT YOUR ONE POWER SUPPLY WILL POWER 2 DRIVES EASILY. AS DISK DRIVE POWER SUPPLIES ARE VERY HARD TO COME BY, YOU MUST AGREE THAT ONE TO FOUR LINK WIRES ARE A VERY CHEAP ALTERNATIVE.

J1 & J2 IDC CONNECTORS:-

THESE NEED A BIT OF AN EXPLANATION AS BOTH DRIVES AND DISK CONTROLLER USE THE TERM J1. THE BLOCK DIAGRAM ON TOP LEFT IS AS IN THE TECHNICAL REFERENCE MANUAL AND SHOWS PIN FUNCTIONS. THE J1 & J2 PINOUT DIAGRAM SHOWS ORIENTATION AS WELL. THE ONLY DIFFERENCE BETWEEN J1 & J2 IN THE DISK CONTROLLER IS PIN 14 MARKED WITH AN ASTERICK WITH J1 SUPPLYING DRIVE 1 AND J2 DRIVE 2 ENABLE SIGNALS. ALL OTHER SIGNALS ARE COMMON BETWEEN J1 & J2 IN DISK CONTROLLER AND J1 IN BOTH DRIVES.

J3 & J4 HEADERS:-

BOTH THESE CONNECTORS ARE UNDER THE MAIN PCB AND SLIP OFF VERY EASILY IF FOR SOME REASON YOU TRY REMOVING PCB AS THE LEADS ARE VERY SHORT AND ARE DIFFICULT TO REPLACE. THE PINOUT AT BOTTOM OF PAGE SHOWS PIN NUMBERS AND WIRE COLOURS. J3 COLOURS CAN VARY, BUT PIN 1, BLACK SEEMS TO BE CONSTANT. J4 HAS ONLY 3 WIRES AND PIN 13 IS NOT USED. NOTE: PIN 13 UNDER THE BOARD IS CUT AWAY.

NOTE - DO NOT DO THE MODS IF YOU HAVE NO PROBLEMS WITH ONE POWER SUPPLY AND TWO DRIVES. I WOULD LIKE TO EXPRESS MY THANKS TO NEVILLE HUGHES FOR TRACKING DOWN THE PROBLEM AND ESPECIALLY FOR SHARING THE SOLUTION WITH US.

THE SCREENS ARE BUILT USING A GRAPHICS EDITOR. I WOULD SUGGEST BRUCE KITCH'S ART GALLERY AS BEING SUITABLE. THE FILES MUST LOAD INTO THE VIDEO DISPLAY AREA I.E. 7000H-77FFH. (BUT SEE LATER COMMENTS).

HAVING COME THIS FAR, THE ACTUAL READ-IN LOOP IS QUITE SIMPLE! A TRIPLE-NESTED LOOP CONSTRUCT IS USED. THE OUTER LOOP SWITCHES THE MEMORY BANKS SEQUENTIALLY. THE INTERMEDIATE LOOP PASSES THE MSB OF THE DESTINATION IN THE SELECTED BANK TO THE M/L ROUTINE. THE INNER LOOP READS THE FILENAME FROM THE DATA STATEMENT, CHECKS ITS SIZE, POKES THE NAME INTO ANOTHER AREA OF THE PROGRAM AND FINALLY LOADS THE FILE INTO THE VIDEO DISPLAY AREA. FINALLY THE SCREEN PAGE IS MOVED UP INTO THE MEMORY BANK FOR STORAGE. THIS COMPLETES THE WORK THAT LOADUP CARRIES OUT.

THE FINAL BASIC PROGRAM CALLED THROWUP IS AUTOLOADED. THIS IS A SIMPLE ROUTINE THAT USES A TRIPLE-NESTED LOOP SIMILAR TO THAT OUTLINED FOR LOADUP EXCEPT THAT THE SCREEN PAGES ARE BROUGHT DOWN FROM HI-MEM TO THE VIDEO DISPLAY AREA. THE MSB OF THE SOURCE AND DESTINATION ADDRESSES ARE INTERCHANGED TO ACHIEVE THIS CHANGE IN SENSE OF MOVEMENT. THE INNER LOOP IS A DELAY LOOP TO SLOW DOWN THE SPEED OF THE PAGING. AS WRITTEN, TWO OPTIONS EXIST TO DISPLAY THE 24 SCREENS. A SIMPLE OR PLAIN DISPLAY USES THE SMALL BLOCK MOVE ROUTINE. A CONSIDERABLE AMOUNT OF "HASH" APPEARS USING THIS NON-INTERRUPT DRIVEN ROUTINE. THE SCREEN BUFFER IS NOT USED. THE SECOND OPTION FOR DISPLAY USES THE ROUTINES IN MOVEUP. THESE USE THE INTERRUPT-DRIVEN DISPLAY SYSTEM AND ARE COMPLETELY "HASH-FREE".

DISCUSSION OF MOVEUP.

THE SOURCE CODE FOR MOVEUP IS BY FAR THE MOST INTERESTING AND ILLUMINATING PORTION OF THE PROJECT. IT CONSISTS OF A NUMBER OF GENERAL PURPOSE "PRIMITIVE" SUBROUTINES.

THERE ARE NINE "FANCY" SCREEN MOVE ROUTINES. THE ACTION OF THESE IS DESCRIBED BY THEIR TITLES - SPLAT, OPEN-UP, ROLL UP/DOWN, PUSH UP/DOWN, FOUR BAR ROLL DOWN, AND L-R/R-L SWEEPS. WITH THE EXCEPTION OF THE SWEEPS, ALL OTHER SCREEN MOVES INVOLVE VERICAL MOVEMENTS OF THE PICTURES. THIS MOVEMENT IS THE EASIEST TO PROGRAM AS CONSECUTIVE BLOCKS OR LINES OF THE SCREEN ARE MOVED USING THE BLOCK MOVE COMMAND. MOST OF THE ADDITIONAL PROGRAMMING KEEPS TRACK OF THE APPROPRIATE SOURCE, DESTINATION AND SIZE POINTERS. USUALLY EITHER A 2K BLOCK (ONE FULL SCREEN), OR A 3 BYTE (ONE SCREEN LINE), PORTION OF MEMORY IS REQUIRED TO BE MOVED.

THE SWEEPS ARE MUCH MORE DIFFICULT TO PROGRAM. THE LOGIC USED TO ACHIEVE THE HORIZONTAL REPLACEMENT, TWO BITS AT A TIME, IS THE SUBJECT OF A FURTHER ARTICLE ON LOGICAL OPERATORS. EXPERIENCED PROGRAMMERS MAY FOLLOW THE METHOD THROUGH THE COMMENTS INSERTED IN THE SOURCE CODE. SOME VERY ELEGANT MATHEMATICS IS USED.

ALL OF THE MOVE ROUTINES WRITE TO A SCREEN BUFFER RATHER THAN DIRECTLY INTO THE VIDEO DISPLAY RAM AREA. ALSO DURING THIS WRITE PERIOD, ALL INTERRUPTS ARE DISABLED SO THAT PROCESSING SPEED IS OPTIMIZED. THE SCREEN BUFFER IS USED SO THAT THE VIDEO DISPLAY MAY BE INTERRUPT DRIVEN SUCH THAT FLICKER OR HASH IS AVOIDED.

THE TIMING OF THE INTERRUPT DRIVEN DISPLAY, THAT ELIMINATES THE SCREEN HASH, IS ACHIEVED BY TWO ROUTINES THAT ARE CALLED FROM THE INTERRUPT VECTOR. THE SCREEN BUFFER IS MOVED IN TWO HALVES AS THERE IS INSUFFICIENT TIME IN THE DISPLAY FLYBACK PERIOD TO MOVE THE ENTIRE 2K SCREEN. A DISPLAY AND PAUSE ROUTINE IS ENTERED TO PERMIT THE SCREEN BUFFER TO BE MOVED INTO THE VIDEO DISPLAY RAM. THE PAUSE LOOP IS LOCATED IN THE DOS ROM, AND BY CHOOSING A SUITABLE DURATION, A SMOOTH MOVEMENT CAN BE OBTAINED.

TWO OTHER GENERAL PURPOSE SUBROUTINES ARE GIVEN THAT SAVE AND RESTORE THE REGISTER SET TO THE STACK UPON ENTRY AND EXIT TO ANY MACHINE CODE. FURTHERMORE, THE REGISTER VALUES ARE UNCHANGED. VERY USEFUL.

FINALLY, THE USE OF A JUMP TABLE TO ENTER THE NINE ROUTINES CONSIDERABLY SIMPLIFIES THE SET-UP OF THE USR POINTERS. THIS TECHNIQUE IS TO BE RECOMMENDED.

FURTHER ENHANCEMENTS.

THAT ABOUT OUTLINES THE ESSENTIALS OF THE PROGRAMS. NOTE THAT INSTRUCTIONS ARE INSERTED IN THE CODE TO ALLOW THE PROCEDURES TO BE FOLLOWED. ALSO THE CODE HAS BEEN WRITTEN WITH SPECIFIC CONSTANTS INSERTED RATHER THAN GENERALIZED VARIABLES. FOR THOSE WHO ARE INTERESTED, IT IS POSSIBLE TO STORE A COUPLE OF FURTHER SCREENS IN THE TOP OF BANK 0 BY SETTING THE TOP-OF-MEMORY EVEN LOWER BUT THE ELEGANCE OF THE TRIPLE-NESTED LOOPS IS LOST! (REFER LOAD MAP).

A FURTHER REFINEMENT OF THE LOADING AND SAVING TECHNIQUE IS SHOWN IN THE CODE FOR THROWUP. ON REFLECTION AND WHEN THE 24 SCREENS ARE LOADED INTO THE BUFFERS IN HI-MEM, THERE ARE IN REALITY THREE 16K BLOCKS OF DATA EXTENDING FROM C000H TO FFFFH. IT WOULD BE CONVENIENT AND A LITTLE FASTER, TO SAVE AND LOAD THESE 16K BLOCKS TO- AND FROM- DISK RESPECTIVELY. DIALOG ENCOUNTERED DURING PROGRAM EXECUTION INDICATES HOW THIS REFINEMENT CAN BE ACHIEVED.

OBSERVANT PROGRAMMERS WILL NOTICE THAT SUBROUTINE SC0 "(SPLAT") IN MOVEUP IS NOT USED IN THE PRESENT VERSION. THIS CAN BE USED IN LIEU OF THE 14 BYTE M/L ROUTINE AND PROVIDE HASH-FREE ANIMATION.

ONE FURTHER ENHANCEMENT IS TO USE DATA COMPRESSION TECHNIQUES TO STORE THE SCREENS INTO THE BUFFER AREAS. MOST GRAPHIC SCREENS HAVE MANY SECTIONS OF "SHARED" BYTES, FOR EXAMPLE, IN "BACKGROUND" AREAS. THIS WOULD BE A VERY FRUITFUL AREA FOR EXPERIMENTATION AS MANY MORE THAN 24 SCREENS COULD BE STORED IN THE 64K PACK.

I TRUST THAT THIS ARTICLE PROVIDES SOME INSIGHT INTO AN INTERESTING AREA OF PROGRAMMING. SHOULD ANYONE WISH TO COMMUNICATE WITH ME ON THEIR EFFORTS, THEN I WOULD BE PLEASED TO DO SO. A NUMBER OF THESE ENHANCEMENTS ARE OPERATIONAL ON MY "FULLY-FLEDGED" VERSION.

```
10 '***********************************************************
20 '***      LOAD-UP PROGRAM II OF III TO LOAD 24 HI-RES      ***
30 '*** SCREENS INTO 64K MEMORY EXPANSION.  BOB KITCH 6/88  ***
40 '***********************************************************
898 '
899 '***START SUBPROGRAM.
900 GOTO 1100
998 '
999 '***LOAD 2K SCREEN FILE.
1000 BLOAD"ABCDEFGH":              :'***POKE ADDR. 31825 TO 31832
1010 GOTO 2220
1020 '***DO NOT ALTER ANY CODE ABOVE THIS LINE.
1030 '***OTHERWISE CHANGE AD% IN LINE #2100
1098 '
1099 '***CHECK THAT 64K MEM. EXP. OPERATIONAL.
1100 GOSUB 3020
1110 FL%=0                          :'***FLAG FOR TEST CONDITIONS.
1120 FOR I%=1 TO 3                  :'***BANKS 1 TO 3.
1130     OUT 127,I%:SOUND 9,2       :'***I/O PORT 7FH.
1140     POKE -1000,(100-I%)        :'***TEST ADDR. 0FC18H.
1150 NEXT I%
1160 FOR I%=3 TO 1 STEP -1          :'***BANKS 3 TO 1.
1170     OUT 127,I%:SOUND 9,2
1180     IF PEEK(-1000)<>(100-I%) THEN FL%=-1
1190 NEXT I%
1200 IF FL%<>0 THEN PRINT@64,"64K RAM NOT FITTED.":STOP
1210 IF FL%=0 THEN PRINT@64,"64K RAM OK"
1298 '
1299 '***CHECK THAT DOS OPERATIONAL BY CHECKING FIRST 4 ID BYTES
1300 IF (PEEK(16384))<>170 THEN FL%=-1        :'***<0AAH>@4000H
1310 IF (PEEK(16385))<>85 THEN FL%=-1         :'***<55H>@4001H
1320 IF (PEEK(16386))<>231 THEN FL%=-1        :'***<0E7H>@4002H
1330 IF (PEEK(16387))<>24 THEN FL%=-1         :'***<18H>@4003H
1340 IF FL%<>0 THEN PRINT@128,"DOS NOT FITTED.":STOP
1350 IF FL%=0 THEN PRINT@128,"DOS OK"
1398 '
1399 '***CHECK TOM IS 0BEC8H
1400 IF (PEEK(30897))<>200 THEN FL%=-1
1410 IF (PEEK(30898))<>190 THEN FL%=-1
1420 IF FL%<>0 THEN PRINT@192,"TOM NOT SET CORRECTLY":STOP
1430 IF FL%=0 THEN PRINT@192,"TOM OK"
1496 '
1497 '***LOWER OOM TO 0AFFFH FOR BUFFER, M/L AND JUMP POINTERS.
1498 '***0B200H-0BBFFH IS A SCREEN BUFFER.
1499 '***0BC00H-0BE0FH IS M/L MOVE ROUTINES LOADED FROM "MOVEUP"
1500 POKE 30897,255:POKE 30898,175:CLEAR 50
1510 PRINT:PRINT"LOADING MOVE-UP ROUTINE."
1520 BLOAD"MOVEUP":                         :'***LOAD SCREEN MOVE SUBS.
1598 '
1599 '***POKE IN BLOCK MOVE FROM 0BEABH. (0BE10H-0BEAAH SPARE.)"
1600 DATA 243              :' DI
1610 DATA 033,000,112      :' LD HL,7000H       (SOURCE)
1620 DATA 017,000,192      :' LD DE,C000H       (DESTINATION)
1630 DATA 001,000,008      :' LD BC,0800H       (SIZE)
1640 DATA 237,176          :' LDIR
1650 DATA 251              :' EI
1660 DATA 201              :' RETURN
1670 FOR AD%=-16725 TO -16712      :'***FROM 0BEABH TO 0BEB8H.
1680     READ DT%:POKE AD%,DT%
1690 NEXT AD%
1698 '
1699 '***SET USR VECTOR TO 0BEABH.
1700 POKE 30862,171:POKE 30863,190
1798 '
```

```
1799 '***SET ADDR. FOR MSB OF DESTINATION IN M/L FOR PAGING.
1800 MD%=-16719                          :'***MSB OF DEST. PG. 0BEB1H.
1898 '
1899 '***PAUSE AND PUT UP MESSAGE.
1900 GOSUB 3020:PRINT"A COUPLE OF OPTIONS EXIST HERE."
1910 PRINT:PRINT" <1> CONTINUE WITH 2K BY 24 PIC FILES."
1920 PRINT:PRINT" <2> DO 16K BY 3 MEM BANK LOAD.":PRINT
1930 PRINT"ENTER 1 OR 2";:INPUT A$:POKE 30791,ASC(A$)
1940 IF A$="1" THEN GOTO 1960
1950 IF A$="2" THEN GOTO 2400 ELSE GOTO 1900
1960 GOSUB 3020
1970 PRINT"     ***INSERT PICTURE DISK***"
1980 SOUND8,5;0,3;8,5;0,3;8,5:GOSUB 3000
1998 '
1999 '***DATA FOR 24 SCREEN FILES.
2000 '***MEMORY BLOCK 1.
2010 DATA 1.1.EFGH,1.3.EFGH,1.2.EFGH,1.4.EFGH
2020 DATA 1.5.EFGH,1.6.EFGH,1.7.EFGH,1.8.EFGH
2030 '***MEMORY BLOCK 2.
2040 DATA 2.1.EFGH,2.3.EFGH,2.2.EFGH,2.4.EFGH
2050 DATA 2.5.EFGH,2.6.EFGH,2.7.EFGH,2.8.EFGH
2060 '***MEMORY BLOCK 3.
2070 DATA 3.1.EFGH,3.3.EFGH,3.2.EFGH,3.4.EFGH
2080 DATA 3.5.EFGH,3.6.EFGH,3.7.EFGH,3.8.EFGH
2098 '
2099 '***MAIN READ-IN ROUTINE.
2100 AD%=31825:MODE(1)
2110 FOR I%=1 TO 3                       :'***MEM. BLOCKS 1 TO 3
2120    OUT 127,I%                       :'***SET MEMORY BANK.
2130    FOR J%=192 TO 255 STEP 8         :'***MSB 0C0H,0F8H,8H(8 SCRNS)
2140       POKE MD%,J%                   :'***SET MSB OF PAGE IN M/L.
2150       F$=""                         :'***ASSISTS STRING HANDLING.
2160       READ F$:L%=LEN(F$):IF L%>8 THEN F$=LEFT$(F$,8):L%=8
2170       IF L%<>8 THEN F$=LEFT$("        ",(8-L%))+F$
2180       FOR K%=1 TO 8                 :'***POKE IN FILENAME.
2190          POKE AD%-1+K%,ASC(MID$(F$,K%,1))
2200       NEXT K%
2210       GOTO 1000                     :'***LOAD FILE FROM DISK.
2220    K%=USR(0)                        :'***MOVE SCREEN TO HI-MEM.
2230    NEXT J%
2240 NEXT I%
2298 '
2299 '***DISPLAY END MESSAGE.
2300 MODE(0):GOSUB 3020                  :'***RETURN TO TEXT MODE.
2320 PRINT@64,"ALL SCREENS HAVE BEEN SAVED TO  THE MEMORY ";
2330 PRINT"EXPANSION."
2340 PRINT"REINSERT THE <PROGRAM DISK> TO  CONTINUE DISPLAY"
2350 SOUND 8,5;0,3;8,5;0,3;8,5
2360 PRINT@320,"IF <MEMORY BANK SAVE> WANTED-"
2370 PRINT"THEN CONTINUE":GOSUB 3000
2398 '
2399 '***RUN THROW-UP DISPLAY PROGRAM.
2400 PRINT:PRINT"LOADING THROW-UP"
2410 RUN"THROWUP"
2997 STOP
2998 '
2999 '***SUROUTINE FOR NEW SCREEN.
3000 PRINT@480,"[illegible]";
3010 A$=INKEY$:A$=INKEY$:IF A$="" THEN GOTO 3010
3020 CLS:PRINT@13,"[illegible]":PRINT:PRINT:RETURN
9998 '
9999 '***UPDATE DISK FILE.
10000 ERA"LOADUP":SAVE"LOADUP":END
```

VZ300 32K RAM EXPANSION BY JOE LEON

THE CIRCUIT IS THE SAME AS USED FOR THE VZ200 PROJECT COUPLE ISSUES BACK. AS THE VZ300 HASN'T A RAM BOARD TO MODIFY ANOTHER SOLUTION HAD TO BE FOUND AND IT'S EASIER THAN THE VZ200 PROJECT. THE DECODING ON THE 138 DECODER WAS DESIGNED TO GIVE ONLY ONE OUTPUT, Q0 - A32768-A65535 (8000H-FFFFH).

IF YOU COMPARE THE PINOUTS OF THE VZ300 16K BASIC ROM AND THE 32K RAM CHIP YOU'LL NOTE THAT ONLY THREE PINS DIFFER. THEY ARE PIN 1-A14, PIN 20-CS BAR AND PIN 27-WR BAR. SO IT SEEMS ONLY LOGICAL THAT WE PIGGYBACK THE 32K RAM CHIP ON IT VIA A SOCKET WHICH IS A NEAT ARRANGEMENT AND THEREFORE NO PCB IS REQUIRED.

A SMALL PIECE OF VEROBOARD IS USED TO MOUNT THE 74LS138 CHIP AND AS YOU'LL NOTE BY THE DIAGRAM NOT HARD TO ASSEMBLE AT ALL. ALSO NOTE THE ORIENTATION OF THE 16K ROM, 32K RAM AND 74LS138 CHIP. THE TWO ARROWS ON THE VZ300 PCB LAYOUT INDICATE POSITIONS OF THE 16K ROM AND MEMORY EXPANSION CONNECTOR. THE PINOUT OF THE MEMORY EXPANSION CONNECTOR IS ALSO SHOWN TO MAKE CONSTRUCTION EASIER.

START BY PREPARING YOUR PIECE OF VEROBOARD BY CUTTING IT TO SIZE AND USING AN 1/8" DRILL BIT BY HAND CUT THE COPPER TRACKS AS INDICATED. SOLDER THE THREE LINK WIRES ON FIRST AND THE 16 PIN SOCKET ON NEXT MAKING SURE OF ORIENTATION. NOTE - WHEN CONNECTING MREQ-BAR WIRE TO TRACK FOUR ON VEROBBOARD BEND IT OVER UNDERNEATH SO IT TOUCHES TRACK FIVE AS WELL AND SOLDER WHICH SAVES A LINK WIRE.

OPEN UP YOUR VZ, REMOVE PCB FROM CASE AND UNSOLDER RF SHIELD. GET 28 PIN SOCKET AND BEND PINS 1, 20 AND 27 AT RIGHT ANGLES AND SOLDER A LENGHT OF WIRE TO EACH. PLACE SOCKET ON 16K ROM AND SOLDER REMAINDER OF PINS TO ROM BEING CAREFUL OF SOLDER BRIDGES. MAKE SURE SOCKET PIN # 1 MATCHES PIN # 1 ON THE ROM.

CONNECT FOUR WIRES FROM THE VEROBOARD TO THE BACK OF THE EDGE CONNECTOR FINGERS AND SOLDER THE CS BAR WIRE FROM THE SOCKET TO VEROBOARD NEXT. THE TWO REMAINING WIRES ON THE SOCKET GO TO THE EDGE CONNECTOR. INSPECT YOUR WORK FOR BRIDGES OR ERRORS AND WHEN SATISFIED PLUG IN 32K RAM AND 74LS138 CHIPS INTO THEIR SOCKETS. WRAP VEROBOARD ASSEMBLY IN ELECTRICAL TAPE OR ENCLOSE IT IN CARDBOARD SLEEVE TO PREVENT SHORTS.

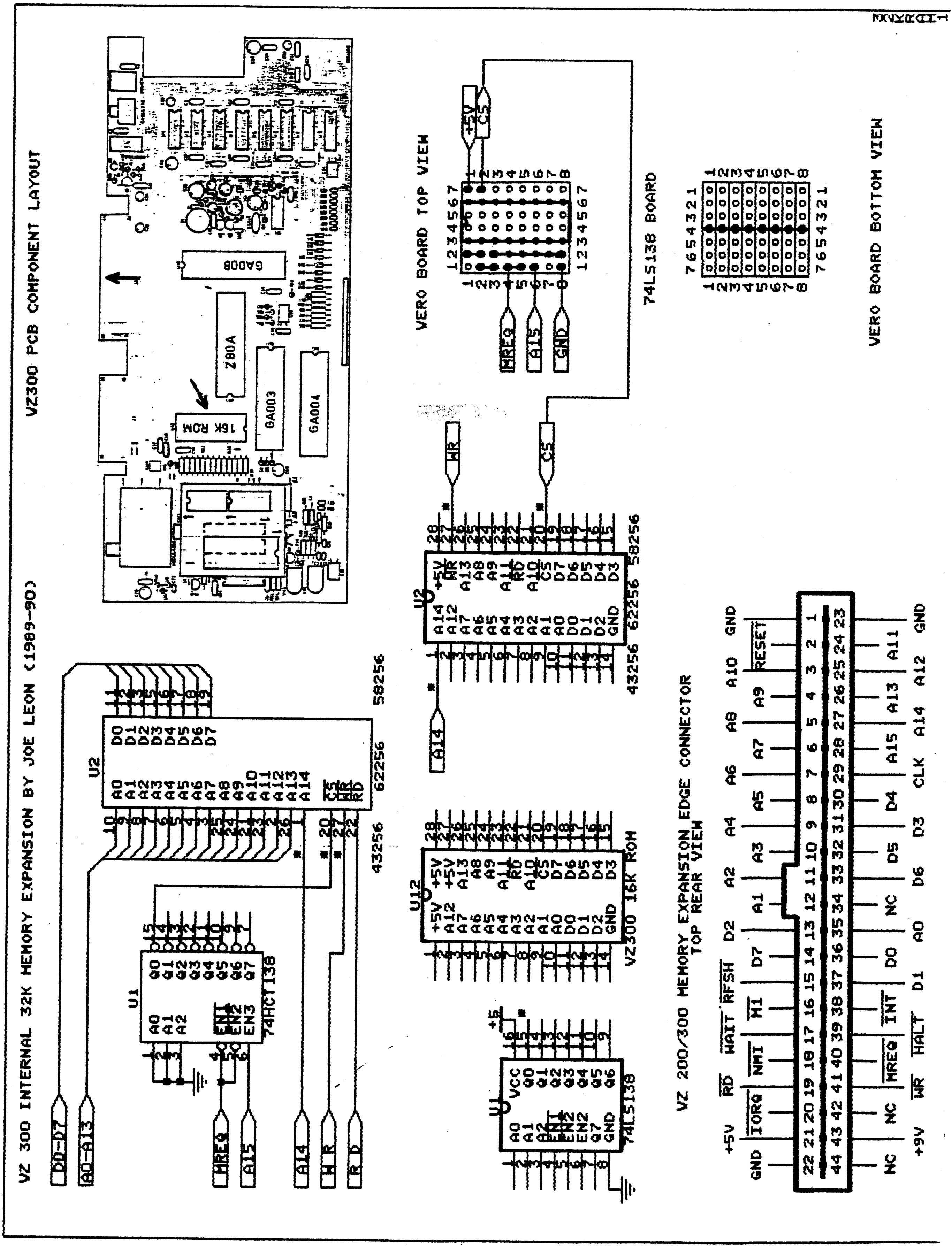
POWER UP YOUR VZ AND IF THE NORMAL READY MESSAGE APPEARS TYPE IN THE FOLLOWING LINE AND PRESS RETURN.

```
PRINT PEEK(30897)+256*PEEK(30898)
```

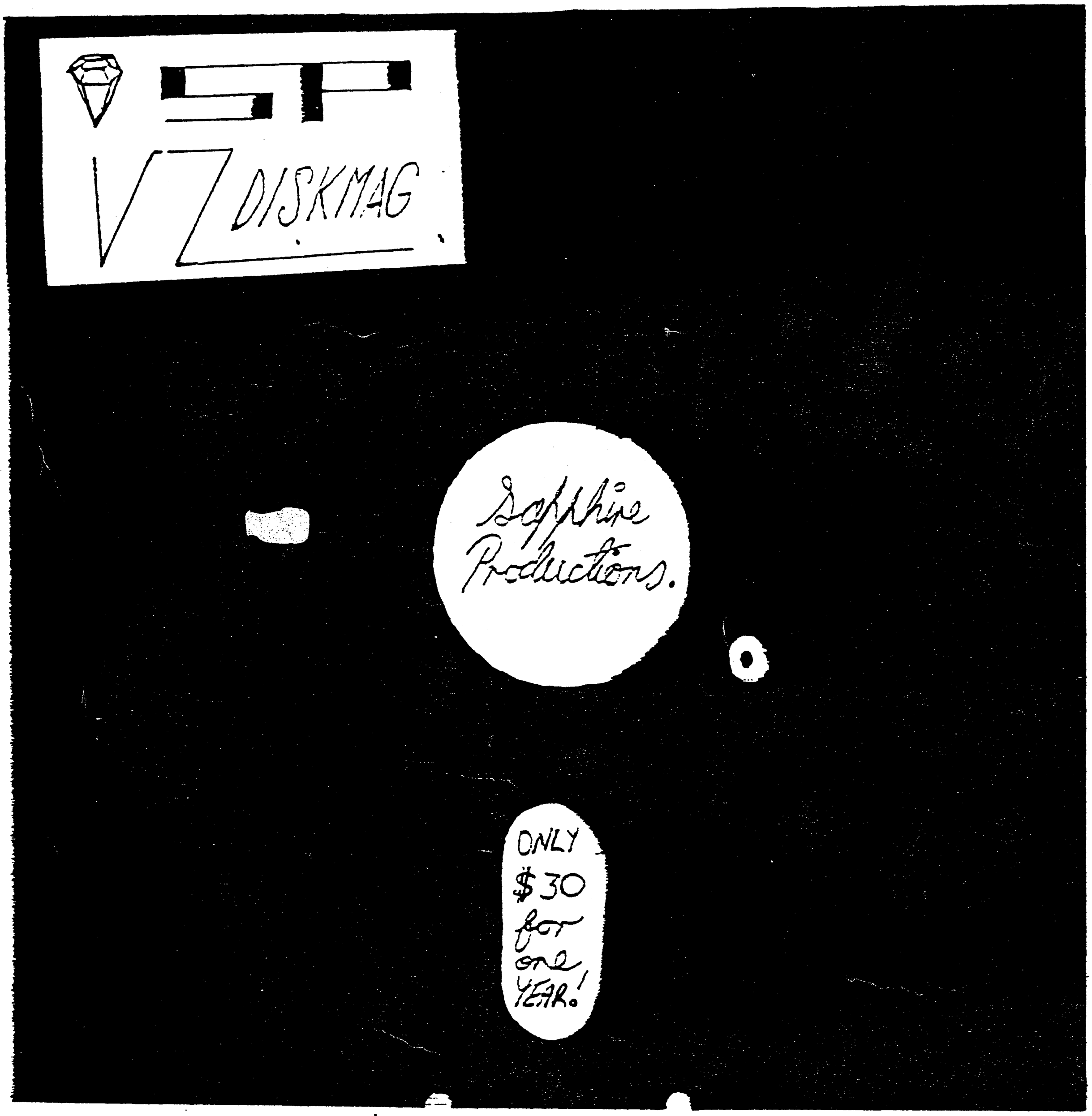
IF THE ANSWER IS 65535 WITH NO DISK DRIVE OR EXTERNAL MEMORY PLUGGED IN THEN IT MEANS YOUR INTERNAL MEMORY EXPANSION WAS SUCCESSFUL AND YOU NO LONGER NEED EXTERNAL MEMORY CARTRIDGES WITH THEIR SLOPPY EDGE CONNECTORS.

ALL THAT REMAINS NOW IS TO REASSEMBLE AND THE RF SHIELD COULD BE LEFT OFF UNLESS YOU HAVE NOTICEABLE INTERFERENCE. PERSONALLY NONE OF MY VZ GEAR HAS ANY RF SHIELDING AND HAS OPERATED WITH NO PROBLEMS FOR A COUPLE YEARS NOW.

PARTS LIST: 1 X 62256 IC - 1 X 74LS138 IC
1 X 16 PIN AND 1 X 28 PIN IC SOCKETS
1 SMALL PIECE VEROBOARD & SOME HOOK UP WIRE


VZ 300 INTERNAL 32K MEMORY EXPANSION BY JOE LEON (1989-90)
VZ300 PCB COMPONENT LAYOUT
VERO BOARD TOP VIEW
74LS138 BOARD
VERO BOARD BOTTOM VIEW
VZ 200/300 MEMORY EXPANSION EDGE CONNECTOR
TOP REAR VIEW

NEW * DISKMAG FOR SALE * NEW



NEWS GAMES MUSIC

Assembly for Beginners

COMPETITIONS REVIEWS

Write to: Jason Oakley. PO Box 600. TAREE. N.S.W. 2430.

```
****************************************************************
*                                                              *
*    LOOK !!!! --- PROGRAMS FOR SALE --- ALL NEW !!!!          *
*                                                              *
****************************************************************
```

<1> V Z D I S A S S E M B L E R

###############################

WHAT, ANOTHER DISASSEMBLER? BUT, YOU HAVE ALREADY GOT ONE? THIS ONE IS DIFFERENT!

THIS PROGRAM IS ENTIRELY WRITTEN IN MACHINE CODE. IT ACTUALLY RUNS ABOUT 40 TIMES FASTER THAN D.S.E.'S DISASSEMBLER (OR ANY ONE ELSE'S). IT WILL DISASSEMBLE ANY PROGRAM THAT YOU CAN BLOAD INTO MEMORY. IT WORKS WITH ANY VZ CONFIGURATION. IT DISASSEMBLES EVEN THE 88 EXTRA Z80 OPCODES THAT ZILOG DOESN'T ADMIT TO.

PRICE? ONLY $25.00 - TAPE AND DISK VERIONS AVAILABLE.

PRICE INCLUDES HARDCOPY MANUAL. INTERESTED? YOU MAY PURCHASE THIS PROGRAM FROM PETER HICKMAN, FOR ADDRESS SEE BELOW.

```
****************************************************************
*                                                              *
* BRAND NEW  -  VZ SERIAL INTERFACE PROGRAM  -  BRAND NEW      *
*                                                              *
****************************************************************
```

<2> V Z M O D E M S O F T W A R E

##################################

DID YOU WANT TO TALK TO OTHER COMPUTERS VIA A MODEM? DID YOU BUY THE DSE TERMINAL EPROM, ONLY TO DISCOVER THAT IT ONLY WORKS WITH TAPE. IT ONLY ALLOWS YOU TO PRINT FILES, NOT SAVE THEM OR SEND THEM!

YOUR PROBLEMS ARE SOLVED! THE HICKMAN BROTHERS, PETER AND ANDREW, HAVE A BRAND NEW PROJECT WHICH WILL ALLOW YOU TO SEND, RECEIVE & SAVE FILES VIA A MODEM. IT WORKS WITH DISK!

SALE PRICE $25.00 ONLY

INCLUDED ARE INSTRUCTIONS FOR THE HARDWARE MODIFICATIONS.

A SMALL MODIFICATION IS NEEDED TO YOUR DISK CONTROLLER. YOUR USER GROUP MAY HELP YOU MODIFY YOUR COMPUTER TO USE THIS EXCITING NEW SOFTWARE! IF YOU HAVE THE FUNCTION KEYS MOD AS WELL, THEN YOU WILL BE ABLE TO SEND EXTRA ASCII CHARACTERS SUCH AS:-

{|}~_

THE MANUAL IS SUPPLIED ON DISK FOR YOU TO PRINT OUT WITH YOUR DISK VERSION OF E & F WORDPROCESSOR. IF YOU DO NOT OWN AN E & F WORDPROCESSOR PROGRAM, PLEASE ENCLOSE ANOTHER $5.00 (TOTAL $30.00) FOR PHOTOCOPYING AND POSTAGE OF THE MANUAL.

FOR PURCHASE OR MORE INFORMATION CONTACT:-
PETER HICKMAN P.O. BOX 8, WERRINGTON N.S.W. 2760.

CONTRIBUTIONS TO THE HUNTER VALLEY VZ JOURNAL :-

IF YOU ARE THINKING OF CONTRIBUTING TO THE JOURNAL THE PREFERED FORMAT IS BASIC LISTINGS, WORD PROCESSOR OR SOURCE CODE FILES ON TAPE OR DISK. FILES FROM THE FOLLOWING WORD PROCESSORS CAN BE ACCEPTED :-

E & F TAPE OR DISK PATCH 3.1-3.3, WORDPRO CARTRIDGE, WORDPRO PATCH AND ALL QUICKWRITE WORD PROCESSOR FILES.

WANTED TO BUY ---------------------

64K RAM PACKS - CONTACT JOE LEON
22 DRURY STREET WALLSEND NSW 2287 --- PHONE (049) 51 2756

CLUB MEETINGS -- ALL WELCOME --

FIRST FRIDAY OF MONTH - NO MEETING IN JANUARY 1990

VENUE - JESMOND NEIGHBOURHOOD CENTRE MORDUE PARADE JESMOND
(REAR STOCKLAND MALL - BIG W)

JUNE 1 - ANNUAL GL[illegible]AL MEETING - COMMITTEE ELECTIONS
MACHINE CODE & ASSEMBLY CONTINUED (MONTHLY)
COMPUTER SHOW UPDATE & IDEAS (MONTHLY)
HARDWARE MODS DEMONSTRATION (BRING ALONG YOUR PROJECT)

FUTURE DEMONSTRATIONS -

EPROM PROGRAMMER & ERASER, AUCTION NIGHT - USING THE VZ, RITTY, ETC. IF YOU HAVE ANY IDEAS FOR A DEMONSTRATION OR A SUBJECT THEN PLEASE LET YOUR COMMITTEE KNOW.

CLUB COMMITTEE & SUBSCRIPTIONS -

PRESIDENT --------- ROSS WOODS --- (049) 71 2843
SECRETARY/EDITOR -- JOE LEON ----- (049) 51 2756
TREASURER --------- GARY BULLEY -- (049) 54 7561
COMMITTEE MEMBERS - COLIN BRIDGE - PETER JONES

SUBSCRIPTION TO - AUST. - 6 MONTHS $11.00 - 12 MONTHS $21.00
H.V.VZ.JOURNAL - N. Z. - 6 MONTHS $13.00 - 12 MONTHS $26.00

HUNTER VALLEY VZ USERS' GROUP - PO BOX 161 JESMOND 2299
NEW SOUTH WALES AUSTRALIA

VZ USER GROUPS & PUBLICATIONS --

VZ DOWN UNDER - VZ MAGAZINE - 6 ISSUES - $18.00 PER YEAR
HARRY HUGGINS 12 THOMAS SREET MITCHAM VICTORIA 3132

WAVZ - WESTERN AUSTRALIA VZ USER GROUP
GRAEME BYWATER P O BOX 388 MORLEY W A 6062

BRISBANE VZ USERS WORKSHOP - C/O 63 TINGALPA ST. WYNUM WEST 4178
SOFTWARE FOR SALE - DISK MENU

NOTE :- WHEN WRITING TO ANY ABOVE OR H.V.VZ. USERS' GROUP FOR INFORMATION PLEASE ENCLOSE A S.S.A.E. OR NZ 2 INT. REPLY COUPONS.

FOR SALE E & F W.P. PATCH 3.3

PATCH 3.3 WRITTEN BY DAVE MITCHELL WILL CONVERT YOUR E & F TAPE WORD PROCESSOR FOR FULL DISK USE WHILE RETAINING ALL ORIGINAL FUNCTIONS. BELOW ARE ADDED DISK COMMANDS & FUNCTIONS :-

LOAD, SAVE, ERASE, RENAME, DIRECTORY, INITIALIZE, UPDATE, DRIVE 1 & 2, SHIFTLOCK & IMBEDDED PRINTER CONTROL CODES PLUS CTRL+P WHICH BYPASSES PRINT MENU AND PRINTS TO SCREEN OR PRINTER. A ROUTINE IS ALSO PROVIDED TO CONVERT YOUR BASIC PROGRAM OR SOURCE CODE FILES INTO WORD PROCESSOR FILES.

PATCH 3.3 HAS PROVISION FOR IMBEDDING PRINTER CONTROL CODES IN TEXT AND FAST SAVING AND LOADING OF TEXT DATA TO AND FROM DISK USING BLOCK SAVE/LOAD TECHNIQUES. PRINTER CONTROL CODES CAN BE SAVED TO TAPE OR DISK.

BSTWP.F - THIS UTILITY PROVIDED WITH PATCH 3.3 WILL CONVERT BASIC PROGRAMS AND ED/ASS. SOURCE CODE FILES INTO WORD PROCESSOR FILES.

SYSTEM REQUIREMENTS - VZ 300 + 16K RAM PACK - VZ 200 + 26K

PATCH 3.3 IS COPYRIGHT TO AND ONLY AVAILABLE FROM :-
HUNTER VALLEY VZ USERS' GROUP P.O.BOX 161 JESMOND 2299
N.S.W. AUSTRALIA - PHONE JOE LEON (049) 51 2756

PRICE - AUS/NZ AU$20.00 - UPDATE - AUS-$10.00 - NZ-AU$11.00.
UPDATING AVAILABLE ONLY TO PREVIOUS PURCHASERS OF PATCHES.

FOR MORE INFORMATION WRITE TO H.V.VZ.U.G. ENCLOSING A SSAE.

EXTENDED DOS V1.3 - $15.00

UPDATED VERSION WITH EXTRA COMMANDS ADDED :-

OLD COMMANDS - MERGE, DIRA, LDIRA, DIRB, LDIRB, OLD, OLD., DEC, HEX, STATUSA AND LSTATUSA. STATUSA AND LSTATUSA ALSO WORKS WITH VERSION 1.0 DOS.

NEW COMMANDS :-

- MENU - LOADS AND RUNS BINARY OR TEXT MENU PROGRAM FROM DISK.
- CODE - SIMPLIFIES USING PRINTER CONTROL CODES DIRECTLY OR FROM WITHIN A PROGRAM.
- LTAB - IS FOR SETTING OF LEFT MARGIN.
- MOVE - MOVES BASIC FILE FROM DISK TO CHOSEN MEMORY ADDRESS.
- UPD - ERASES OLD FILE AND SAVES WITH SAME FILE NAME.

MENU/FILE COPIER - $15.00

THIS UTILITY WILL READ YOUR DISK DIRECTORY AND PRESENT YOU WITH SEVERAL OPTIONS. USING THE CURSOR YOU CAN RUN/BRUN ANY PROGRAM OR SELECT FILE COPY, REN, ERASE, DRIVE 1 OR 2, ETC. BESIDES COPYING TEXT AND BINARY FILES ALL OTHER FILES CAN BE COPIED AS WELL EXEPT FOR DATA FILES.

FOR PURCHASE OR INFORMATION CONTACT DAVE MITCHELL - (079) 27 8519
24 ELPHINSTONE ST. NORTH ROCKHAMPTON QUEENSLAND 4701

FOR INFORMATION OR DEMONSTRATION IN NEWCASTLE AREA CONTACT :-
JOE LEON - (049) 51 2756 - 22 DRURY STREET WALLSEND NSW 2287